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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,722	11/26/2003	Anandaroop Bhattacharya	111079-135498	9782

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EXAMINER

HOFFBERG, ROBERT JOSEPH

ART UNIT	PAPER NUMBER
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2835

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/31/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/723,722	Applicant(s) BHATTACHARYA ET AL.	
	Examiner Robert J. Hoffberg	Art Unit 2835	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,3,6,8-14,16,19-23,25,27,34-37 and 39-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 2,3,6,8-14,16,19-23,25,27,34-37 and 39-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Response to Arguments

1. The indicated allowability of claims 3, 6, 11-14, 19-23, 36 and 40 is withdrawn based upon the rejections below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 8-10, 16, 23, 25, 27, 34, 36-37 and 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kan et al. (Air Cooling of High-Power Modules with Low Power Piezoelectric Fans, IBM Technical Disclosure Bulletin, Feb 2004).

With respect to Claims 8, 23 34, 36 and 39-41, Kan et al. teach a piezoelectric synthetic jet actuator (#1) coupled to the board (step 3) to provide an air current (step 1, air flow), the air current in convective communication with the integrated circuit (module) (claims 34 and 8). Kan et al. fails to disclose a case and a vent. Official notice is taken of the fact that a case, encasing the integrated circuit and the board, having a form factor including a plurality of external dimensions compatible with Personal Computer Memory Card International Association (PCMCIA) standard for a Type I, a Type II, or a Type III PC Card having a plurality of specifications governing the form factor and the external dimensions; an output vent on the case to at least facilitate an exhaust of heat

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convectively emitted from the integrated circuit into an ambient; an inlet vent disposed on a second portion of the surface of the case, to facilitate an intake of air from the ambient and a 32-bit Cardbus connector to directly couple the standardized peripheral apparatus to a host device in a substantially rigid relationship are notoriously known in the computer art at the time of the invention; therefore, it would have been obvious to use the cooling device of Kan et al. in the PCMCIA card. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the jet apparatus of Kan et al. with standardized peripheral apparatus for the purpose of to minimizing the size of the air flow generator (step 3).

With respect to Claim 9, Kan et al. disclose the claimed invention except for the height of the jet actuator. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the height of the jet actuator of any size that fits within the PCMCIA standard including 2-3 mm high , since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

With respect to Claim 10, Kan et al. disclose the claimed invention except for the operating power of the jet actuator. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the input power of the jet actuator to be of any value that is below the PCMCIA standard including 10 and 50 milliwatts, since it has been held that where the general conditions of a claim are

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disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

With respect to Claim 16, Kan et al. disclose the claimed invention except that the apparatus is a selected one of a data storage device or a communication interface adapter. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

Regarding method claims 37, 25 and 27, the method steps recited in the claims are obviously necessitated by the device structure as taught by Kan et al. including a synthetic jet actuator (#1) as recited above in the rejection to claim 36.

4. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kan et al. (Air Cooling of High-Power Modules with Low Power Piezoelectric Fans, IBM Technical Disclosure Bulletin, Feb 2004) in view of Kitahara (JP 2000-099209).

Kan et al. fail to teach an outlet vent and an inlet vent on the same surface. Kitahara teaches an outlet vent (#7), disposed on a first portion (see Fig. 7) of a surface of the case (claim 2) and an inlet vent (#8) disposed on a second portion (see Fig. 7) of the surface of the case, to facilitate an intake of air from the ambient. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the apparatus of Kan et al. with the vents of Kitahara for the purpose of locating the vents to increase air flow in and out of the standardized peripheral apparatus.

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5. Claims 6, 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kan et al. (Air Cooling of High-Power Modules with Low Power Piezoelectric Fans, IBM Technical Disclosure Bulletin, Feb 2004) in view of Wyatt et al. (US 6,972,950).

With respect to Claims 6 and 19-21, Kan et al. teach the apparatus including includes a piezoelectric type synthetic jet actuator (#1) (claims 20 and 21). Kan et al. fail to teach the jet actuator is positioned substantially near the inlet vent. Wyatt et al. teach the air flow generator (#41) positioned substantially near the inlet vent (#21) (claim 19). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the apparatus of Kan et al. with the inlet vent of Wyatt et al. for the purpose of locating the input vent to increase ambient air flow into the standardized peripheral apparatus.

With respect to Claim 22, Kan et al. in view of Wyatt et al. discloses the claimed invention except for the operating power of the jet actuator. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the input power of the jet actuator to be of any value that is below the PCMCIA standard including 10 and 50 milliwatts, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

6. Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kan et al. (Air Cooling of High-Power Modules with Low Power Piezoelectric Fans, IBM Technical Disclosure Bulletin, Feb 2004) in view of Ito (JP 2000-82890).

Kan et al. disclose the claimed invention except for a partition and a plurality of airflow chambers. Ito discloses at least one partition (between #6 and #7) disposed inside the case using available space to provide a plurality of airflow chambers (near #6 and near #7) (claim 11), the air flow generator (#3) is located substantially in a first air flow chamber (see Fig. 1) (claim 12), the first air flow chamber (near #6) is defined in part by the second portion of the surface (left side of end opposite #4) on which the inlet vent is disposed; and the first portion of the surface on which the outlet vent is disposed defines a second air chamber (see Fig. 1) (claim 13), the first airflow chamber is flow-coupled (see Fig. 1) to the second air flow chamber (claim 14). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the apparatus of Kan et al. with the partition and air flow chambers of Ito for the purpose of defining an air flow path through a case with both the inlet and outlet vents on the same surface. Official notice is taken of the fact that an integrated circuit is located in the same air flow chamber as the flow generator is well are notoriously known in the computer art at the time of the invention; therefore, it would have been obvious to use them in any desirable way including as claimed. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the apparatus of Kan et al. with the partition of Ito for the purpose of controlling an air flow path through a case to increase the cooling of electronic components within the case where the electronic components, the air flow generator, inlet vent and outlet vents and are not linear.

7. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kan et al. (Air Cooling of High-Power Modules with Low Power Piezoelectric Fans, IBM Technical Disclosure Bulletin, Feb 2004) in view of Ito (JP 2000-82890) as applied to claim 11 above, and further in view of Wyatt et al. (US 6,972,950).

Kan et al. in view of Ito disclose the claimed invention except a partition is connected orthogonally to the board. Wyatt et al. disclose at least one partition (#63) is connected orthogonally to the board (#31). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the apparatus of Kan et al. with the partition of Ito with the partition of Wyatt et al. for the purpose of controlling an air flow path through a case to increase the cooling of electronic components within the case (Col. 5, lines 4-6).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kitahara (JP 2000-99209) discloses a board (#32); an integrated circuit (#33); a case (see Fig. 7) conforming to the Personal Computer Memory Card International Association (PCMCIA) standard (Para. 0001, line 2) having a connector (#4), an outlet vent (Fig. 7, #7) and an inlet vent (Fig. 7, #8); and a fan (#21) to provide an air current to exhaust of the convectively emitted heat through the vent, the air current in convective communication (see Fig. 8) with the integrated circuit. Pokharna et al. (US 7,023,697) disclose a jet apparatus to cool a PCMCIA card slot. Hasegawa (JP 10-49528) discloses a PC card having a fan. Wyatt et al. (US 6,972,950) disclose an integrated circuit and a flow generator in the same air flow chamber.

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert J. Hoffberg whose telephone number is (571) 272-2761. The examiner can normally be reached on 8:30 AM - 4:30 PM Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on (571) 272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RJH *RJH*

MICHAEL DATSKOVSKIY
PRIMARY EXAMINER

Michael Datskovskiy
01/26/07